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10/669,325

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Naoki Watanabe

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ALEXANDRIA, VA 22314

EXAMINER

ROJAS, MIDYS

ART UNIT

PAPER NUMBER

2185

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PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/669,325	<b>Applicant(s)</b> WATANABE, NAOKI	
	<b>Examiner</b> Midys Rojas	<b>Art Unit</b> 2185	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 15 February 2008.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-24 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-24 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 25 September 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \*    c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)                     | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____                                      |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)          | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____  | 6) <input type="checkbox"/> Other: _____                          |

## **DETAILED ACTION**

### ***Continued Examination Under 37 CFR 1.114***

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 2/15/08 has been entered.

### ***Response to Arguments***

2. Applicant's arguments, filed on 2/15/08, have been fully considered but are not persuasive.

Applicant argues that Yamagami does not teach said journal further including a sequence number, and said sequence number is used to check a dropout of said journal by said first storage unit system and said second storage unit system. However, the Journal of Yamagami includes a sequence number (control data within the journal includes a sequence number SEQ#, Col. 6, lines 25-28), and said sequence number is used to check a dropout of said journal by said first storage unit system and said second storage unit system. The sequence number provides the order of the journals received (Col. 10, lines 33-45) and it is used to identify journals that need to be restored and to determine the order in which the journals are going to be restored (Col. 11, lines 10-22 and lines 34-38). Wherein using the sequence numbers to identify the journals that need to be restored, the system is checking a journal dropout since those journals that need restoration are considered to be dropped out.

***Claim Rejections - 35 USC § 112***

3. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

4. Claims 1-10 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. The specification does not properly describe a sequence number used to check a dropout of a journal. The specification only describes the dropout of a request (paragraph 0105).

Claims 2-10 are rejected as having the same deficiencies as the claim that they depend from.

5. Claims 11-20 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. The specification does not properly describe a sequence number used to check a dropout of a journal. The specification only describes the dropout of a request (paragraph 0105).

Claims 12-20 are rejected as having the same deficiencies as the claim that they depend from.

6. Claims 23-24 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not

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described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. The specification does not properly describe a sequence number used to check a dropout of a journal. The specification only describes the dropout of a request (paragraph 0105).

Claim 24 is rejected as having the same deficiencies as the claim that it depends from.

7. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

8. Claims 1, 11, 23 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. It is not clear what is meant by checking a dropout of a journal. It is not understood what condition causes a dropout of a journal or what happens to a journal when it is dropped out. For examination purposes, the examiner will interpret the term "dropout" to mean the condition in which a journal needs to be recovered.

### ***Claim Rejections - 35 USC § 102***

9. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

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10. Claims 1-20 are rejected under 35 U.S.C. 102(e) as being anticipated by Yamagami (7,065,589).

Regarding Claim 1, Yamagami discloses a system (Figure 1A) comprising:

a first storage unit system (110a) connected to a computer (100a) and having a first disk device (PVOL 111a) and a first controller (storage subsystems include storage controllers, Col. 2, lines 51-55);

a second storage unit system (110b) having a second disk device (SVOL 111b) and a second controller (storage subsystems include storage controllers, Col. 2, lines 51-55); and

a third storage unit system (110c) connected to said first storage unit system and said second storage unit system and having a third storage area (JNL 112, see Col. 5, lines 53-62) and a third controller (storage subsystems include storage controllers, Col. 2, lines 51-55),

wherein said first controller responds to a write request received from said computer (primary storage system including a storage controller is configured to handle data read/write requests, Col. 4, lines 58-62) to transmit to said third storage unit system a journal including write data received from said computer and address information indicative of a position at which said write data is written (Col. 3, lines 10-40, wherein the journal is written to the second storage system according to information provided in the control data and therefore, the control data must represent address information indicative of a position), stores said write data in said first disk device (the first storage system is configured to store write data in the first data volume upon receiving a write request from a host, Col. 3, lines 30-33), and returns a response to said write request to said computer after transmitting said journal (...waits for an acknowledgement from

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the intermediary storage system 110c. The write completion is sent to the host upon receiving the acknowledgement, Col. 9, lines 60-63), and

wherein said second controller receives first control information issued by said first controller (the journal is then copied from the intermediary system to the secondary storage system asynchronously, Col. 3, lines 19-21; wherein the journal information includes control data, Col. 3, lines 15-16) and including a storage position of said journal used when said second storage unit system acquires said journal (control data includes an index that is an identifier for PVOL from which the journal data is derived... an address provides an offset address in the PVOL from which the write data is written, Col. 6, lines 16-37), acquires said journal from said third storage unit system on the basis of said first control information, and stores said write data in said second disk device on the basis of the address information included in said journal (third storage system includes a second data volume and configured to receive the journal from the second storage system and store the journal data of the journal to the second storage system according to information provided in the control data, Col. 3, lines 37-41).

Said journal further includes a sequence number (control data within the journal includes a sequence number SEQ#, Col. 6, lines 25-28), and said sequence number is used to check a dropout of said journal by said first storage unit system and said second storage unit system. The sequence number provides the order of the journals received (Col. 10, lines 33-45) and it is used to identify journals that need to be restored and to determine the order in which the journals are going to be restored (Col. 11, lines 10-22 and lines 34-38). Wherein using the sequence numbers to identify the journals that need to be restored, the system is checking a journal dropout since those journals that need restoration are considered to be dropped out.

Regarding Claim 2, Yamagami discloses a system according (Figure 1A) wherein said first storage unit system stores said first control information (control data is stored in a cache memory in the primary storage system 110, Col. 9, line 11-14); wherein said second controller acquires said journal and thereafter issues second control information indicative of the acquisition of said journal (the secondary system stores the journal to the allocated buffer space and sends an acknowledgement of the receipt of the journal to the intermediary system, Col. 11, lines 10-12); and wherein said first controller acquires said second control information (upon receipt of the acknowledgement, the intermediary issues a WRJNL command to indicate the completion of the write data, Col. 11, lines 17-19) and thereafter makes said first control information stored in said first storage unit system ready to be discarded (since the system prevents new journals overwriting journals that have yet to be sent to the secondary storage system, once they are sent to the secondary storage system; as indicated by the acknowledgement; the pointers would allow the old journal to be overwritten by new journals; thus the old journal is ready to be discarded, Col. 6, lines 38-46).

Regarding Claim 3, Yamagami discloses a system wherein said first controller transmits said first control information to said third storage unit system (the primary system transfers the journal information to the intermediary system... the control data is sent first... Col. 10, lines 24-27) and said second controller acquires said first control information stored in said third storage area from said third storage unit system (the intermediary system sends a journal including control data and its corresponding journal data to the secondary system, Col. 11, lines 6-12); and wherein said second controller transmits said second control information to said third storage unit system and said first controller acquires said second control information stored in said third



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storage area from said third storage unit system (the secondary system sends an acknowledgement to the intermediary system and the intermediary system send the acknowledgement to the primary system in the form of a WRJNL command that indicates the completion of the write data, Col. 11, lines 10-22).

Regarding Claim 4, Yamagami discloses a system wherein said third storage unit system (intermediary attribute not shown in Figure 4, Col. 50-56) stores said first control information and said second control information in different logical volumes inside said third storage area (two different journal volumes as shown in Figure 4, wherein journals include control data as shown in Figure 3), respectively, and makes such setting that a write request from either of said first and second storage unit systems is to be permitted in respect of each logical volume. In the invention of Yamagami, as shown in Figure 4, one journal volume is grouped with the primary volume 300a and another is grouped with the secondary volume 300b. Therefore, the control information for each volume is stored separately (see Col. 7, lines 40-64).

Regarding Claim 5, Yamagami discloses a system wherein in the event that a fault takes place in said first storage unit system (fail over, Col. 5, lines 44-52), said second storage unit system consults the first control information stored in said third storage unit system to acquire a journal having write data not stored in said second disk device from said third storage unit system (journal is copied from the intermediary system to the secondary system, Col. 3, lines 19-25), and stores write data included in the acquired journal in said second disk device on the basis of address information included in said acquired journal (Col. 3, lines 37-41).

Regarding Claim 6, Yamagami discloses a system wherein when receiving a write request from a computer connected to said second storage unit system after a fault takes place in

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said first storage unit system (fail over implementation... secondary host runs appropriate applications, whereby the secondary system functions as the new primary system, Col. 11, lines 53-60), said second storage unit system has difference information indicative of a storage position of write data written in accordance with said write request; and wherein when said first storage unit system recovers from the fault, said second storage unit system transmits the data stored at the storage position indicated by said difference information to said first storage unit system through a communication path connecting said first storage unit system and said second storage unit system (when the primary storage system is activated after the failure, it is required to keep mirroring between the two sites, by setting data volumes in the secondary storage system as PVOLs, Col. 11, lines 60-64).

Regarding Claim 7, Yamagami discloses a system further comprising a communication path connected to said first storage unit system and said second storage unit system (the storage systems are coupled to each other via communication links 120a and 120b, Col. 4, lines 50-55), wherein said first controller transmits said first control information to said second storage unit system through said communication path (primary system transfers journal information, including control data, to secondary system via intermediary system using data path 120a and 120b, Col. 3, lines 10-20); and wherein said second controller transmits said second control information to said first storage unit system through said communication path (secondary system sends an acknowledgement of the receipt of the journal information, including the control data, to the primary system via intermediary system, Col. 11, lines 10-19).

Regarding Claim 8, Yamagami discloses a system wherein when a fault takes place in said third storage unit system, said first controller transmits write data received from said

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computer to said second controller through said communication path, and said second controller stores the write data received through said communication path in said second disk device (synchronous operational mode, Col. 1, lines 60-67). Yamagami discloses that when a storage system fails, it is bypassed or taken out of commission (Col. 5, lines 44-49). Therefore, if the third storage unit fails, the system would continue its operation without it, thus following the methods of the described synchronous operation mode.

Regarding Claim 9, Yamagami discloses a system further comprising a fourth storage unit system connected to said first storage unit system and said second storage unit system (Figure 4 wherein the third storage system is represented by the JNL 112 that is associated with the primary system 300a and the fourth storage system is represented by the JNL 112 that is associated with the secondary system 300b; each JNL represents an intermediary journal group, Col. 7, lines 40-57), wherein when a fault takes place in said third storage unit system (Yamagami discloses that when a storage system fails, it is bypassed or taken out of commission; Col. 5, lines 44-49. Therefore, if the third storage unit fails, the system would continue its operation without it), said first storage unit system and said second storage unit system transmit/receive there between a journal, first control information and second control information through said fourth storage unit system (the system would treat the failed JNL 112 from 300a the same as it treats the primary system when it fails; described in Col. 5, lines 44-49, therefore, the system would use JNL from 300b to perform the functions of the failed JNL 300a. This means that the fourth storage unit would enable the transfer of control information in the form of a journal as the third storage unit did, described in Col. 3, lines 10-21).

Regarding Claim 10, Yamagami discloses a system further comprising a fourth storage unit system connected to said first storage unit system and said second storage unit system (Figure 4 wherein the third storage system is represented by the JNL 112 that is associated with the primary system 300a and the fourth storage system is represented by the JNL 112 that is associated with the secondary system 300b; each JNL represents an intermediary journal group, Col. 7, lines 40-57), wherein said first controller transmits a journal having time information to either of said third storage unit system and said fourth storage unit system (primary system transfers journal including control data to intermediary system, Col. 10, lines 24-27; wherein control data includes time information 214, Col. 6, lines 16-37. In the embodiment of Figure 4, the primary system would transfer the journal to the third storage system represented by the JNL 112 that is associated with the primary system 300a); and wherein said second controller acquires the journal from said third storage unit system or said fourth storage unit system (intermediary storage system transfers journal including control data to secondary system, Col. 11, lines 6-10; wherein control data includes time information 214, Col. 6, lines 16-37. In the embodiment of Figure 4, the fourth system; represented by the JNL 112 that is associated with the secondary system 300b; would obtain the journal from the third system; represented by the JNL 112 that is associated with the primary system 300a; and transfer the journal to the secondary storage system) and writes write data included in the acquired journal to said second disk device in order of times indicated by the time information assigned to said journal (stores the journal data to the second storage system according to information provided in the control data, Col. 3, lines 37-41).

Claim 11 is rejected using the same rationale as that of Claim 1 wherein Yamagami discloses a remote copy system (See abstract) and therefore, the system performs a remote copy method.

Claim 12 is rejected using the same rationale as that of Claim 2 wherein the control information with the old journal is discarded when a new journal overwrites it (since the system prevents new journals overwriting journals that have yet to be sent to the secondary storage system, once they are sent to the secondary storage system; as indicated by the acknowledgement; the pointers would allow the old journal to be overwritten by new journals; thus the old journal is ready to be discarded, Col. 6, lines 38-46).

Claim 13 is rejected using the same rationale as that of Claim 3.

Claim 14 is rejected using the same rationale as that of Claim 4.

Claim 15 is rejected using the same rationale as that of Claim 5.

Claim 16 is rejected using the same rationale as that of Claim 6.

Claim 17 is rejected using the same rationale as that of Claim 7.

Claim 18 is rejected using the same rationale as that of Claim 8.

Claim 19 is rejected using the same rationale as that of Claim 9.

Claim 20 is rejected using the same rationale as that of Claim 10.

Claim 21 is rejected using the same rationale as that of Claim 1 wherein the sequence number assures security of the write data since it is used to recover methods, thus ensuring that the data is safe (Col. 11, lines 10-22 and lines 34-38).

Regarding Claim 22, Yamagami discloses a storage system wherein after said second storage system receives an information including a location of said blocks and said sequence

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number in said intermediate storage system (the journal is then copied from the intermediary system to the secondary storage system asynchronously, Col. 3, lines 19-21; wherein the journal information includes control data, Col. 3, lines 15-16 and control data includes an index that is an identifier for PVOL from which the journal data is derived... an address provides an offset address in the PVOL from which the write data is written... and a sequence number provides sequence information of the write, Col. 6, lines 16-37 ), said second storage system reads said blocks and said sequence number from said location of said intermediate storage system and stores said blocks read from said intermediate storage system to said second storage area (third storage system includes a second data volume and configured to receive the journal from the second storage system and store the journal data of the journal to the second storage system according to information provided in the control data, Col. 3, lines 37-41).

Claim 23 is rejected using the same rationale as that of Claim 1.

Claim 24 is rejected using the same rationale as that of Claim 22.

The applied reference has a common assignee with the instant application. Based upon the earlier effective U.S. filing date of the reference, it constitutes prior art under 35 U.S.C. 102(e). This rejection under 35 U.S.C. 102(e) might be overcome either by a showing under 37 CFR 1.132 that any invention disclosed but not claimed in the reference was derived from the inventor of this application and is thus not the invention "by another," or by an appropriate showing under 37 CFR 1.131.

### ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Midys Rojas whose telephone number is (571) 272-4207. The examiner can normally be reached on M-TH 6:30am - 5:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Sanjiv Shah can be reached on (571) 272-4098. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Midys Rojas/  
Examiner, Art Unit 2185

MR

/Sanjiv Shah/

Supervisory Patent Examiner, Art Unit 2185

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